

What is claimed is:

1. A radiation system comprising:

irradiation target positioning means for placing an object having an irradiation target to be subjected to irradiation;

5 irradiation target imaging means for taking images of an irradiation target region including the irradiation target;

irradiation means for administering radiation to the irradiation target region according to prescribed irradiation conditions;

10 position and direction measuring means for measuring positions and directions of said irradiation target positioning means, said irradiation target imaging means and said irradiation means, and for computing relative positions and directions between them;

15 irradiation condition correcting means for obtaining position and direction of the irradiation target region in the images using computation results of said position and direction measuring means and compared results obtained by comparing the irradiation target regions in the images successively taken by  
20 said irradiation target imaging means, and for correcting the irradiation conditions in which the obtained position and direction is reflected; and

control means for controlling the radiation to the irradiation target region in response to the irradiation  
25 conditions obtained as a result of the correction by said irradiation condition correcting means.

2. The radiation system according to claim 1, wherein said position and direction measuring means measures positions and  
30 directions of said irradiation target positioning means, said

irradiation target imaging means, and said irradiation means in a 3D coordinate system.

3. The radiation system according to claim 1, wherein said irradiation target imaging means comprises a plurality of imaging devices of different modality, and wherein

said irradiation condition correcting means obtains the position and direction of the irradiation target region in the images using computation results obtained by said position and direction measuring means and compared results obtained by comparing the irradiation target region in the images taken by said imaging device of the same modality among the images successively taken by said plurality of imaging devices of different modality.

4. The radiation system according to claim 1, wherein said irradiation target imaging means comprises: a high resolution imaging device for taking high resolution 3D images of the irradiation target region which are used for setting the irradiation condition; and a real-time imaging device for taking high resolution 3D images of the irradiation target region before and during irradiation, and wherein said irradiation condition correcting means obtains the positions and directions of the irradiation target regions in the images using the computation results obtained by said position and direction measuring means, compared results obtained by comparing the irradiation target regions in the images taken by said high resolution imaging device, and compared results obtained by comparing the irradiation target regions in the images taken by said real-time imaging device, and corrects the irradiation conditions

using the images which are acquired by said high resolution imaging device and by said real-time imaging device, and in which the obtained positions and directions are reflected.

- 5 5. An irradiation target movement monitoring method of an irradiation system including irradiation target positioning means for placing an object having an irradiation target to be subjected to irradiation, irradiation target imaging means for taking images of an irradiation target region including the irradiation target, and irradiation means for administering radiation to the irradiation target region according to prescribed irradiation conditions, said irradiation target movement monitoring method comprising:
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an image acquisition step of successively taking images of the irradiation target region by said irradiation target imaging means;

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a position and direction measuring step of measuring positions and directions of said irradiation target positioning means, said irradiation target imaging means and said irradiation means, and of computing relative positions and directions between them; and

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an irradiation target monitoring step of obtaining positions and directions of the irradiation target regions in the images using computation results obtained by said position and direction measuring means and compared results obtained by comparing the irradiation target regions in the images successively taken in the image acquisition step.

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6. The irradiation target movement monitoring method of an irradiation system according to claim 5, wherein the irradiation
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target monitoring step obtains the positions and directions of the irradiation target regions in the images using computation results obtained in the position and direction measuring step and compared results obtained by comparing the irradiation target regions in the images successively taken by said irradiation target imaging means of the same modality.

7. A irradiation target position recognizing method of an irradiation system including irradiation target positioning means for placing an object having an irradiation target to be subjected to irradiation, irradiation target imaging means for taking images of an irradiation target region including the irradiation target, and irradiation means for administering radiation to the irradiation target region according to prescribed irradiation conditions, said irradiation target movement monitoring method comprising:

an image acquisition step of successively taking images of the irradiation target region by said irradiation target imaging means;

a position and direction measuring step of measuring positions and directions of said irradiation target positioning means, said irradiation target imaging means and said irradiation means, and of computing relative positions and directions between them; and

a target position recognizing step of obtaining positions and directions of the irradiation target regions in the images using computation results obtained by said position and direction measuring means and compared results obtained by comparing the irradiation target regions in the images

successively taken in the image acquisition step, and of

correcting the irradiation conditions by reflecting the positions and directions in the images.

8. The irradiation target position recognizing method of an  
5 irradiation system according to claim 7, wherein the target  
position recognizing step obtains the positions and directions  
of the irradiation target regions in the images using computation  
results obtained in the position and direction measuring step  
and compared results obtained by comparing the irradiation  
10 target regions in the images successively taken by said  
irradiation target imaging means of the same modality.